CUMULATIVE INDEX 1996

Volume 16

March DNA TECHNOLOGY, pages 1-249

June HEPATITIS AND CHRONIC LIVER DISEASE, pages 251–512

September CLINICAL MYCOBACTERIOLOGY, pages 513-779

December BLOOD BANKING, pages 781-1011

Note: Page numbers of article titles are in boldface type

ABH antigens, platelet, 818

ABO antigens, matching of, computers in, 956–957

in platelet transfusions, 806-807 platelet, 806-807, 817-818

N-Acetylcysteine, in hepatitis C, 484 in mycobacterial specimen decontamination, 558–559

Acid-base imbalance, in massive transfusions, 876

Acid-fast bacteria, smears of, interpretation of, 554–557

microscopic examination of, 553–554 in developing countries, 705–707 predictive value of, 556–557 preparation of, 556, 681

quality control of, 658-659 safety with, 530 test sensitivity of, 667-668

Acidosis, metabolic, in massive transfusions, 876

Acquired immunodeficiency syndrome. See Human immunodeficiency virus infection.

Activated partial thromboplastin time, 849-850

abnormal, differential diagnosis of, 850-852

Activated protein C and/or A, resistance to, 169–186

> etiology of, 171–173 evaluation of, 861–862

factor V gene mutation in, 173–183 biochemistry of, 173–175 laboratory evaluation of, 176–183

multifactorial, 176 thrombosis risk in, 175-176 pathogenesis of, 170-171

Adenosine deaminase deficiency, gene therapy for, 200–201

Adhesion molecules, in liver, 364

Adrenal hyperplasia, congenital. See Congenital adrenal hyperplasia. Adsorption columns, in apheresis, 919–921

Aerosols, of mycobacteria, sources of, 529 Affinity adsorption apheresis, 919–921 Aflatoxin, hepatitis B and, 255–256

Agar disk diffusion method, in drug susceptibility testing, of atypical mycobacteria, 653

Agar disk elution method, in drug susceptibility testing, of atypical mycobacteria, 653

Agar 7H11 plates, in drug susceptibility testing, of mycobacteria, 644–645 AIDS. See *Human immunodeficiency virus*

infection.

Air filters, for biological safety cabinets, in

mycobacteriology, 530–535 Alanine aminotransferase, in hepatitis B, in interferon therapy, 467–473

in hepatitis C, in interferon therapy, 476–481

Albumin, as replacement fluid, in apheresis, 916

Alcohol, blood, testing for, consent for, 942 hepatitis B virus interactions with, 255,

273–287, 289–306 animal studies of, 293–295 apoptosis and, 299–301 carcinogenic effects of, 278–280, 402 cytokines and, 295–297

dietary influences on, 292 mechanisms of, 275-276

CUMULATIVE INDEX 1996 Alcohol (Continued) prevalence of, 274 regeneration inhibition in, 293-299 serologic patterns in, 276-278 signal transduction alterations in, 293 hepatitis C virus interactions with, 264-265, 273-287, 289-306 animal studies of, 293-295 apoptosis and, 299-301 carcinogenic effects of, 280-281, 402-403 cytokines and, 295-297 dietary influences on, 292 mechanisms of, 275-276 prevalence of, 274 regeneration inhibition in, 293-299 serologic patterns in, 278 signal transduction alterations in, 293 hepatitis D and, 258, 460 in hepatocellular carcinoma, 378, 386chemical carcinogen interactions in, 386-388 hepatitis virus interactions in, 388-390 metabolism of, in liver, 275, 292 Alcoholic liver disease, fibrogenesis in, 371

Alkalosis, metabolic, in massive transfusions, 876 Alloimmunization, in platelet transfusions,

828-829 prevention of, 785-786 reduction of, 800-803, 810

Alzheimer's disease, apolipoprotein E polymorphism in, 111-112 Aminosalicylic acid, pharmacokinetics of,

720-721 Amplicor systems, for Chlamydia testing,

evaluation of, 52-59 in mycobacteriology, 630-631, 683 Amplification techniques, in

mycobacteriology, 682-685. See also Polymerase chain reaction.

Gen-Probe MTD system (transcription-mediated), 632-634, 682-683 principles of, 617-619

Amplified fragment length polymorphism, in forensic testing, 190

Anaphylactic reactions, in plasmapheresis, angiotensin-converting enzyme inhibitors and, 917-918

Ancrod time test, in coagulation disorders,

Androgens, excessive production of, in congenital adrenal hyperplasia, 125-126

Angiocentric immunoproliferative lesion, DNA analysis in, 2

Angiotensin-converting enzyme inhibitors, impact of, in apheresis, 917-918

Animal models, for hepatocellular injury, in hepatitis, 309-310

Antibodies, intracellular, in gene therapy, 204

platelet. See Platelet(s), antibodies to. removal of, apheresis in, 919-921 to hepatitis viral antigens. See specific vi-

Anticholesterol agents, blood lipid levels and, in apolipoprotein E

polymorphism, 113 Anticoagulants, lupus, measurement of, 858-859

Antigens, of hepatitis viruses. See specific viruses.

platelet. See Platelet(s), antigens of. Antimycobacterial drugs, in mycobacterial infections, susceptibility testing of. See Drug susceptibility testing, of mucobacteria.

therapeutic monitoring of, 717-729 assay methods and technology for, 723-725

mechanisms of action and, 719 pharmacodynamic parameters of, 719 pharmacokinetic parameters of, 718-

practical issues in, 722-723 results interpretation in, 725-727 Antiphospholipid antibodies, measurement of, 858-859

Antisense oligonucleotides, in gene therapy, 203

Antisense therapy, for neoplasia, 207-208 Antithrombin III, deficiency of, evaluation of, 859

in coagulation regulation, 846 Apheresis, 907-929 affinity adsorption, 919-921 for granulocyte harvesting, 914-916 for stem cell harvesting, 907-914 of platelets, 800-801 phototherapy with, 921-922 reactions during, 917-918

replacement fluids for, 916 versus intravenous immunoglobulin treatment, 919

Apolipoprotein E, polymorphism of, 105-123

cholesterol reduction therapy and, 112-113

genotype analysis in, 114, 116 genotype frequencies in, 116-117 in Alzheimer's disease, 111-112 in atherosclerosis, 110-111 in cerebrovascular disease, 112 in coronary artery disease, 110-111 in hyperlipoproteinemia, 106, 108-110 in peripheral vascular disease, 112 lipoprotein receptor binding and, 106-107

phenotype analysis in, 113–114 posttranslational modification in, 106 Apoptosis, bcl–2 gene rearrangements and, 30

of liver cells, alcohol effects on, 299–301 Arylsulfatase, in mycobacterial

identification, 572, 578, 581, 583, 587 Asians, hepatitis B in, interferon in,

471–472
Aspergillosis, in immunodeficiency, 78
Association of State and Territorial Public
Health Laboratory Directors, 731–743
assessment activities of, 732–735

conferences of, on mycobacteriology,

737-738

fellowship program of, 740-741 information transfer by, 740

mission of, 731

Pacific Islands laboratory case study of, 736–737

policy development by, 735–738 quality assurance activities of, 739–742 self-assessment tools of, 741–742 training programs of, 739–741

Ataxia-telangiectasia, breast cancer in, 148 Atherosclerosis, apolipoprotein E polymorphism in, 110-111

gene therapy for, 201–202 ATM gene, DNA analysis of, direct, 154 mutations of, in ataxia-telangiectasia, 148

Auramine rhodamine stain, for acid-fast bacteria, 554–555

Autoimmune disorders, photopheresis in,

Autoimmune thrombocytopenic purpura, platelet antibodies in, 829–831

Autolymphocyte therapy, in gene therapy, for neoplasia, 206

Automation, in mycobacteriology, culture equipment, 560, 562–563

of polymerase chain reaction, 217–219 Autopsy, consent for, 938–939

Azithromycin, in mycobacterial infections, 641

B lymphocytes, gene rearrangement in, in hematopoietic disorders, 1–21 BACTEC 12B system, in mycobacteriology,

nucleic acid probes in, 608 BACTEC NAP system, in

mycobacteriology, quality control of, 661

BACTEC systems, in mycobacteriology, in drug susceptibility testing, 645-646 of Mycobacterium avium complex, 648-650

> p-nitro-α-acetylamino-βhydroxypropiophenone in, 604–605

procedure for, 560-564 safety in, 530-531

BACTEC TB system, cross-contamination in, prevention of, 666–667 Bak antigens, platelet, 819

Balloon cell degeneration, in liver disease,

Battery, unauthorized treatment as, 932-933

B-cell lymphoproliferative disorders, in transplantation, 13–16

bcl-2 gene, 23-47 IgH locus of, 27-28

normal, 26

protein of, function of, 29-31

rearrangements of, in lymphoid malignancies, 23–24

detection of, 31–39 diffuse lymphoma, 40 follicular lymphoma, 39–40 fusion with 2]_H, 28–29 Hodgkin's disease, 41 molecular events in, 25–26 prognostic value of, 42–43 protein function in, 29–31 small noncleaved cell lymphoma,

40–41 tissue localization of, 42 Benches, horizontal laminar flow, in

mycobacteriology, 535–536 Bethesda assay, for coagulation factor

inhibitors, 856–857 Biocontainment, in mycobacteriology, primary, 531–538

secondary, 538 Biohazard bags, in mycobacteriology, 541 Biological safety cabinets, in

mycobacteriology, certification of, 536

class I, 531-532 class II, 532-535

location of, 538

operational suggestions for, 536–537 Biosafety. See Safety.

BITS computer program, in blood typing training, 957–958

Blood, typing of, computers in, 957–958 Blood banking, apheresis, 907–929

coagulation and, 837-871

error detection and reduction in, 961-973

informatics in, 947-960 legal issues in, 931-946

massive transfusion and, 873–882 mathematical calculations in, 895–906 platelets, 797–816

antibody detection, 817–835 modified, 781–795 red cells, modified, 781–795

safety in, 975-988

Blood banking (Continued) testing in, decision making for, model for, 883–893

Blood culture, of mycobacteria, 561–562 Blood products, hepatitis C in, 260–261 Blood volume, estimation of, 896

Bone marrow transplantation, recurrent leukemia in, stem cell transplantation in, 913

Boosters, for hepatitis B vaccine, 496 Br antigens, platelet, 819 BRCA1 gene, 139–141

DNA analysis of, direct, 153–156, 159–

functional detection of mutations of, 158–159

informed consent for, 162–163 linkage analysis in, 152–153 mutation screening methods for, 155–

tests for, 149, 151–152

identification of, 142–143, 145–146 in ataxia-telangiectasia, 148 in Muir-Torre syndrome, 147

penetrance of, 145 protein of, characteristics of, 146 BRCA2 gene, 146–147

DNA analysis of, informed consent for, 162–163

Breast cancer, hereditary, 139–167
BRCA1 gene in. See BRCA1 gene.
BRCA2 gene in, 146–147, 162–163
clinical features of, 143–144
epidemiology of, 144–145
genotyping of, 140–141
in males, 146–147

molecular diagnosis of, direct DNA detection in, 153–155, 159–160 functional detection of mutations in.

158–159

future directions in, 161 historical perspective of, 148–151 informed consent in, 162–163 linkage analysis in, 152–153 mutation screening methods in,

155-158 practical considerations in, 161-162 tests for, 148-151

phenotyping of, 140–141 risk assessment in, 144–145 syndromes associated with, 143–144.

syndromes associated with, 143–144, 147–148

TP53 gene in. See TP53 gene.

TP53 gene in. See TP53 gene. tumor suppressor gene inactivation in, 139

tumors associated with, 143–144 Bronchial alveolar lavage, in specimen collection, for mycobacteriology, 552 Broth microdilution method, for drug susceptibility testing, of atypical mycobacteria, 652-653 Burns, fungal infections in, 79

Caat enhancer binding protein, in liver regeneration, 345–347

Cancer, gene therapy for, 205–208 liver. See Hepatocellular carcinoma. transfusions in, immunosuppressive effects of, 789–790

Candidemia, clinical features of, 74–75 Candidiasis, in immunodeficiency, clinical features of, 74–77

DNA analysis of, 77–78, 80–82, 85 nosocomial, epidemiology of, 82–85 typing of, 80–85

Candiduria, in immunodeficiency, 76–77 Capreomycin, pharmacokinetics of, 720–721

Carbon usage test, in mycobacterial identification, 583, 587–588

Carbonic anhydrase II deficiency, genetic studies of, 213–214

Carcinogens, chemical, in hepatocellular carcinoma. See Hepatocellular carcinoma.

hepatitis B virus as, 395–400, 494–495 hepatitis C virus as, 400–401, 494–495

Carcinoma, hepatocellular. See Hepatocellular carcinoma.

Carriers, of hepatitis B, therapeutic vaccines for, 501 of hepatitis C, therapeutic vaccines for,

501 Catalase, in mycobacterial identification, 572, 578, 581, 583, 588–589

Cell lysis, in polymerase chain reaction, 619

Centrifugation, of mycobacterial samples, safety with, 529–530

Cerebrovascular disease, apolipoprotein E polymorphism in, 112

Cetyl pyridium chloride, in mycobacterial specimen decontamination, 558

Chemical carcinogens, in hepatocellular carcinoma. See Hepatocellular carcinoma.

Chemical mismatch cleavage analysis, in breast cancer, 157–158

Chemiluminescence, for polymerase chain reaction, in mycobacteriology, 632–634

Chemoprotection, in chemotherapy, multidrug-resistant gene modification in, 207

Chemotherapy, myelosuppressive, in stem cell mobilization, for apheresis, 909–910

thrombocytopenia in, affinity adsorption apheresis in, 921

Chlamydia trachomatis, detection of, Amplicor product in, evaluation of, 52–59

multiplex polymerase chain reaction in, 64-68

Cholesterol, blood profiles of, in apolipoprotein E polymorphism, 107–110

atherosclerosis and, 110-111 therapy effects on, 112-113

drugs lowering, apolipoprotein E polymorphism and, 113

Choline deficiency, in alcohol abuse, hepatocellular sensitivity to, 292 Chromatography, in mycobacterial

identification, gas-liquid, 605-606 high-pressure liquid, 606-607 liquid, quality control of, 661-662

Chromogenix Coatest, in activated protein C resistance detection, 183

Cirrhosis, as fibrogenesis sequelae, 371 hepatocellular carcinoma in, 378 in hepatitis B, 255, 273–274 interferon in, 471

malignant transformation of, 399, 402 in hepatitis C, 273-274

malignant transformation of, 401–403 in hepatitis D, 258, 456–457 liver regeneration in, 355

prevention of, hepatitis vaccines for, 493–505

Citrate effect, in massive transfusions, 878 Clarithromycin, in mycobacterial infections, 641

Clinical Laboratory Improvement Amendments, proficiency testing regulations of, 670–671

Clofazimine, pharmacokinetics of, 720–721 Clofibrate, in hepatocellular carcinoma, 383

Clot formation, 843–844

Clothing, protective, for mycobacteriology, 540–541

Coagulation, 837–871 contact system in, 844–845

disorders of, activated protein C and A resistance. See Activated protein C and/or A, resistance to.

evaluation of, 852–862 factor activity assays in, 854–856 factor inhibitor assays in, 856–858 in activated protein C resistance, 861–862

in antithrombin III resistance, 859 in lupus anticoagulants, 858–859 in protein C deficiency, 860 in protein S deficiency, 860–861 thrombin time in, 853–854

in massive transfusions, 876–878 evaluation of, 848–852 factor V in, 838–839 factor VIII in, 838–839 factor X activation in, 842–843 fibrin clot formation in, 843–844 initiation of, 840–842 overview of, 837–838 pathways for, 840–842 platelets in, 839–840 regulation of, 845–847 thrombin in, 839, 843 vitamin K-dependent factors in, 838–839 vitamin K-dependent factors in, 838–839

Coagulation factors, activity levels of, assays for, 854–856 calculation of, 903–905

deficiencies of, in massive transfusions,

inhibitors of, assays for, 856-858 Collagens, in liver, 361-362

gene expression regulation in, 370–371 College of American Pathologists, proficiency testing regulations of, 670–672

Colonial morphology, in mycobacterial identification, 572, 578, 581, 583, 589-590

Colony-stimulating factors, in granulocyte mobilization, for apheresis, 915 in hepatic fibrogenesis, 367–368 in stem cell mobilization, for apheresis, 909–910

Commercial systems, for polymerase chain reaction, in mycobacteriology, 630–631 Compatibility testing, for transfusions, computers in, 956–958

mathematical calculations in, 901 platelet, 809–810
ABO matching for, 806–807

Rh type matching for, 807 Competency, for informed consent,

936–937
Computers, in information processing. See Informatics.

Confidential unit exclusion, in blood donation, 978

Congenital adrenal hyperplasia, 125–137 clinical features of, 125–126 diagnosis of, 126, 131–132 gene involved in, 126–128 genotype-phenotype relationships in, 132–135

molecular genetics of, 128–131 Conjunctiva, lymphoma of, 7–11 Consent. See *Informed consent*.

Contact system, in coagulation, 844–845 Contraceptives, oral, thrombosis risk in, factor V gene mutation and, 176

Contract negotiation, for pathology practice networking, 238–239

Coronary artery disease, apolipoprotein E polymorphism in, 110–111

gene therapy for, 201-202

Corticosteroids, in granulocyte mobilization, for apheresis, 915 in hepatic fibrogenesis inhibition, 368 Cortisol, replacement of, in congenital

adrenal hyperplasia, 126

Cost-effectiveness, in mycobacteriology, in test utilization reduction, 754-755 strategies for, 686-689

of pathology practice networking, 237 Cowden's disease, breast cancer in, 147–148

Credentialing, standard, for pathology practice networking, 236

Crossmatching, for transfusion, mathematical probability of, 901

Cryoglobulinemia, mixed, in hepatitis C, treatment of, 481–482

Cryptantigens, on platelets, 820 Cultures, mycobacterial, blood, 561–562 preparation of, 559–565, 681–682 in developing countries, 706 quality control of, 660–661 safe handling of, 543–548

slide, in drug susceptibility testing, 648

specimen decontamination for, 558–559, 660

Cycloserine, pharmacokinetics of, 720–721 CYP21 genes, in 21-hydroxylase deficiency, 127–131

Cystic fibrosis, gene therapy for, laboratory implications of, 209

Cytokines, in alcohol consumption, 275–276

liver regeneration and, 295–297 in granulocyte mobilization, for apheresis, 915

in liver regeneration, 328–333, 350–354 in stem cell mobilization, for apheresis, 912–913

Cytomegalovirus, removal of, from blood components, 787–788, 803

Cytopathic effect, in hepatocellular injury, in hepatitis, 308, 317

Cytotoxic gene therapy, for neoplasia, 206–207

Decision making, in blood banking, model for, 883–893

Decontamination, of specimens, for mycobacterial culture, 558–559 quality control of, 660

Deferral registry, in blood donation, 941, 950

Delta hepatitis. See Hepatitis D.

Denaturing gradient gel electrophoresis, in breast cancer, 155, 157

Developing countries, mycobacteriology in. See Mycobacteriology, in developing countries.

Dexamethasone, in congenital adrenal hyperplasia, 126

Diabetes mellitus, gene therapy for, 201 Diet, blood lipid levels and, in

apolipoprotein E polymorphism, 113 in alcohol abuse, hepatocellular sensitivity to, 292

Digoxigenin, in polymerase chain reaction detection step, 625–626

Direct automatic sequencing, in breast cancer gene analysis, 154–155

Direct tests, of drug susceptibility, of mycobacteria, 643–645, 647–648

Dithiothreitol, in mycobacterial specimen decontamination, 558

DNA, amplification of, polymerase chain reaction in. See *Polymerase chain* reaction.

storage of, on Guthrie cards, 216 DNA probes, in mycobacteriology, 573,

578, 581 quality control of, 661

DNA technology, apolipoprotein E polymorphism, 105–123

detection methods in, 218 future developments in, 213-222

guidelines for, 215–217

in activated protein C and A resistance, 169–186

in congenital adrenal hyperplasia, 125– 137

in forensic testing, 187-196

in fungal infections, in immunodeficiency, 73–88

in gene therapy, 197-211

in hematopoietic disorders, B and T cell gene rearrangement, 1-21

in hereditary breast cancer, 139-167 in HIV infection, nucleic acid sequence-

based amplification, 89–103 in 21-hydroxylase deficiency, 125–137

in lymphoid malignancies, bcl-2 gene rearrangements, 23-47

in sexually transmitted diseases, multiplex polymerase chain reaction, 61-71

proportion of total test volume, 214–215 role of, 49–60

enthusiasm for, 50-51

example of, Chlamydia Amplicor evaluation as, 52–59

skepticism about, 51-52

Donors, blood, computerized interview of, 949–950

follow-up of, 982-983

for platelet transfusions, 800–801 informed consent for, 940–941 laboratory testing of, 978–982 decision making model for, 883–893 screening of, 948–951 selection of, 975–978 Dot blot test, in breast cancer gene

mutation detection, 160 in forensic testing, 189–190

Drug(s), thrombocytopenia from, 831–832 autoimmune, 830–831

Drug resistance, in tuberculosis, 515 in developing countries, 699–701 testing of. See *Drug susceptibility testing*.

Drug susceptibility testing, of mycobacteria, 641–656, 685–686, 690

BACTEC indirect qualitative test in, 645 BACTEC indirect quantitative test in,

645-646 in developing countries, 707 luciferase indirect qualitative test in,

646-647 methods for, 642-643 principles of, 641-644 proportion method in, 644-645

quality control of, 662–663 slide culture direct test in, 647–648 of *Mycobacterium avium* complex, 648–

652 of Mycobacterium fortuitum-chelonae, 652–

of Mycobacterium marinum, 652-653 of Mycobacterium tuberculosis, 643-648

Educational intervention, for test utilization control, 759–760 Elastin, in liver, 362

Electrochemiluminescence method, in nucleic acid sequence-based amplification, 94, 96–97

Electroimmunoassay, for platelet antibodies, 824

Electronic teleconferencing, for pathology practice networking, 235–236

Electrophoresis, contour-clamped homogenous gel, in fungal typing, 81-82

denaturing gradient gel, in breast cancer, 155, 157

rocket, for platelet antibodies, 824 Endotoxin, in alcohol consumption, liver regeneration and, 297 Entactin, in liver, 362–363

Enzyme immunoassay, for hepatitis C

virus, 259
Enzyme-linked gel assay, in nucleic acid
sequence-based amplification system,
94–95

Epidemiology, of viral hepatitis, 251–271 hepatitis B, 251–256 hepatitis C, 258–265 hepatitis D, 256–258

Epithelial cells, hepatic, in liver regeneration, 326–328

Errors, in blood banking. See Transfusion therapy, error detection and reduction in. Erythrocytes. See Red blood cells.

Esophagus, candidiasis of, in immunodeficiency, 75

ESP System, for mycobacterial culture, 562-563

ESPRE expert system, for platelet transfusion ordering, 955–956 Ethambutol, pharmacokinetics of, 720–721

Ethanol. See *Alcohol*.
Ethidium bromide, in polymerase chain

reaction detection step, 625
Ethionamide, pharmacokinetics of, 720–721

Exchange transfusion, whole blood reconstitution for, 898–899

Expert systems, for blood donor suitability, 951

Extracellular matrix, hepatic, components of, 361–364 degradation of, 365

enhanced production of, 364-365 homeostasis of, 364-365

in liver regeneration, 333-334 regulatory signals in, 367-368

Extracellular transplantation, gene therapy in, 208

Extraction, in polymerase chain reaction, 619-620

Eye protection, for mycobacteriology, 540

Factor V, gene mutations in, in activated protein C and/or A resistance, 173–183

biochemistry of, 173–175 laboratory evaluation of, 176–183 multifactorial, 176

thrombosis risk in, 175–176

in coagulation, 838–839 Factor VIII, in coagulation, 838–839 transfusion of, calculations for, 904–905

Factor X activation, 842–843
Factor XI, in coagulation, 844–845

Factor XII, in coagulation, 844-845
Factor XIII, activity of, measurement of,

Famcyclovir, in hepatitis B, 474 Familial combined hyperlipidemia, apolipoprotein E polymorphism in,

Fetal-maternal hemorrhage, volume of, estimation of, 905

Fialuridine, in hepatitis B, 475 Fibrillin, in liver, 362 Fibrin clot formation, 843–844

Fibrinogen, activity levels of, assays for, 855–856

in coagulation, 843

Fibroblasts, autologous, in gene therapy, for peoplasia, 206

for neoplasia, 206
Fibrogenesis, hepatic, 361–375
augmenters of, 367–368
cell types involved in, 366–367
collagen gene expression and, 370–371
extracellular matrix enhanced
production in, 364–365
in alcoholic liver disease, 371
in viral hepatitis, 371–372
inhibitors of, 368
sequelae of, 371

stellate cell proliferation in, 368–370 versus extracellular matrix degeneration, 365–366

versus normal extracellular matrix, 361–364

Fibronectin, in liver, 362

Fibrosing cholestatic hepatitis, hepatitis B virus variants in, 420

Filtration, of blood component cells, for transfusion, 783–784

Financial system, standardized, for pathology practice networking, 237–238

Flaviviruses, hepatitis C virus as, 258 Fluid therapy, replacement, in apheresis, 916

with massive transfusions, 874

Fluorescent stains, for acid-fast bacteria, 554–555

Forensic testing, DNA technology in, 187–196

history of, 187–188 legal aspects of, 192–193 methods for, 188–191 quality control in, 191–192 regulatory aspects of, 191–192

Freezing and thawing, of blood component cells, for transfusion, 782–783

Fulminant hepatitis, hepatitis B virus variants in, 419–420
Fungal infections, in immunodeficiency,

DNA analysis of, 73–88 aspergillosis, 78 candidiasis, 74–78, 80–85 in burns, 79 in transplantation, 79 laboratory aspects of, 80–82

zygomycosis, 78–79
FV R506Q gene. See Factor V, gene
mutations in.

Gamma irradiation, of blood components, 791

Gancyclovir, in hepatitis B, 473-474 Gas-liquid chromatography, in

mycobacterial identification, 605–606 Gastric lavage, in specimen collection, for mycobacteriology, 552–553

Gene(s), of hepatitis viruses. See under specific virus.

rearrangement of, bcl-2, in lymphoid malignancies, 23-47 in hematopoietic disorders. See *Hema*-

topoietic disorders.

Gene therapy, 197–211
antisense, 207–208
clinical applications of, 198–199

cytotoxic, 206–207 extracellular transplantation and, 208

in infectious disease, 202–205 in monogenic disorders, 199–201 in multigenic disorders, 201–202

in neoplastic disease, 205-208 laboratory impact of, 209-210

metabolic suicide, 216 monitoring of, 209

tissue engineering and, 208 tumor suppressor, 207

Genetic suppressor elements, in gene therapy, 204

Genotoxic carcinogens, in hepatocellular carcinoma, 378–382 Genotypes, of apolipoprotein E, analysis

of, 114, 116 frequencies of, 116–117 of 21-hydroxylase deficiency gene, analy-

sis of, 132–135 Genotyping, of hepatitis C virus. See Hepatitis C virus, variants of.

Gen-Probe MTD system, for polymerase chain reaction, in mycobacteriology, 632–634, 682–683

Glomerulonephritis, in hepatitis C, treatment of, 482

Gloves, for mycobacteriology, 540–541 Glycerol, in freezing and thawing, of blood component cells, for transfusion, 782–783

Graft-versus-host disease, in stem cell transplantation, 914

transfusion-associated, prevention of, blood component irradiation in, 791

Granulocyte(s), transfusion of, 914-916 Granulocyte colony-stimulating factor, in granulocyte mobilization, for apheresis, 915

in stem cell mobilization, for apheresis, 909–910

Granulocyte-macrophage colonystimulating factor, in stem cell mobilization, for apheresis, 909–910 Growth factors, in stem cell mobilization, for apheresis, 909–910
Growth-response genes, induction of, in liver regeneration, 342–344
Guillain-Barré syndrome, treatment of, intravenous immunoglobulin in, 919

Guthrie cards, in DNA storage, 216

Hawthorne effect, in performance, 758 Health care workers, hepatitis B in, 253 hepatitis C in, 260 HELP blood ordering system, 954–956

Hemagglutination assay, mixed passive, for platelet antibodies, 821

Hematocrit, calculation of, 896 Hematopoietic disorders, B and

Hematopoietic disorders, B and T cell gene rearrangement in, 1-21

angiocentric immunoproliferative lesion, 2-4

large granular lymphocytosis, 16–19 lymphoma, of mucosa-associated lymphoid tissue, 5–7

of skin, 11–13 small cell cleaved, 7–11

post-transplant B-cell lymphoproliferative disorder,

Hematopoietic growth factors, in stem cell mobilization, for apheresis, 909–910

Hemoglobin, incremental increase of, after transfusion, calculation of, 898

Hemoglobin dissociation curve, shifting of, in massive transfusions, 875–876

Hemorrhage, fetal-maternal, volume of, estimation of, 905

massive transfusions in. See Transfusion therapy, massive transfusions in.

Hemostasis, primary, 840 protein C in, 170-171

secondary, 840 Hepadnaviruses, 251–252. See also Hepatitis B virus.

Hepatic fibrogenesis. See Fibrogenesis, hepatic.

Hepatitis, fibrosing cholestatic, hepatitis B virus variants in, 420 fulminant, hepatitis B virus variants in,

419–420 °

Hepatitis B, aflatoxin and, 255–256 alcohol and. See Alcohol, hepatitis B virus interactions with.

antigen-negative, 254 carriers of, 252–253

therapeutic vaccines for, 501

chronic, definition of, 253-254 cirrhosis in, 273-274

interferons in, 471 diseases associated with, 254-255 epidemiology of, 252-253 fibrogenesis in, 371-372

geographic distribution of, 396

hepatitis C coinfection with, hepatocellular injury in, 318–319

hepatitis D coinfection with, 258, 455-456, 459-460

interferons in, 472

hepatocellular carcinoma in, 255, 395-406

alcohol interaction in, 278–280, 292, 377, 388–390, 402

carcinogenic mechanisms in, 494–495 hepatitis C coinfection with, 401–402 liver regeneration and, 327–328

pathogenesis of, 493–494 prevention of, 495–500

hepatocellular injury in, 307–324 animal models for, 309–310

hepatitis C coinfection with, 318–319 human leukocyte antigen expression and, 310–314

interferon in, 311-314

patterns of, 307-308

viral antigens and, 314-317

in liver transplantation, interferons in, 473

incidence of, 252-253

interferons in, 467-473

clinical studies of, 468-471

in Asians, 471–472 in liver transplantation, 473

nonresponders to, 472

with cirrhosis, 471 with hepatitis D, 472

liver regeneration in. See Liver, regeneration of.

persistence of, 253–254 prevalence of, 252–253

prevention of, 495–500

serologic response in, 252 transmission of, 253

in blood transfusion, decision making model for, 883–893

prevention of, 976, 977-982

treatment of, 465-475 drugs for, 473-475

vaccines for, 475–475

virus of. See Hepatitis B virus.

Hepatitis B virus, alcohol interactions with. See Alcohol, hepatitis B virus interactions with.

antibodies to, 252

antigens of, in alcohol consumption, 276-278

in chronic disease, 254

in hepatocellular injury, 314–317 in interferon therapy, 467–473

variants of. See Hepatitis B virus, variants of.

model for, 883-893

treatment of, 444, 446, 475-485

drugs for, 483-484 Hepatitis B virus (Continued) vaccines for, 500-501 genes of, 252 virus of. See Hepatitis C virus. core, 407-409, 415-420 Hepatitis C virus, alcohol interactions envelope, 409, 415, 417-419 with. See Alcohol, hepatitis C virus hepatocellular carcinoma and, 397-400 pre-core, 407-408, 415-420 interactions with. surface, 411, 413, 421-423 antigens of, in interferon therapy, 476 X, 409, 411, 421 burden of, 260-261 detection of, 259-260 in hepatitis D virus propagation, 451genes of, 258-259 452 genotypes of. See Hepatitis C virus, varinomenclature of, 251-252 structure of, 251-252 ants of. variants of, 407-428 nomenclature of, 258-259 clinical significance of, 415 quasispecies behavior of, 439-446 structure of, 258-259 core genes, 407-409, 415-420 variants of, 429-449 enhancers and, 421 hepatocellular injury and, 308 clinical significance of, 434-436 in fibrosing cholestatic hepatitis, 420 genesis of, 437-439 in fulminant hepatitis, 419-420 hepatocellular injury and, 308 interferon and, 419 identification methodology for, 432pre-core genes, 407-408, 415-420 promotors and, 421 maintenance of, 437-439 small envelope proteins, 422-423 multiple infections with, 436 surface genes, 411, 413, 421-423 nomenclature of, 432-434 vaccines for, 500 quasispecies behavior of, 439-446 X gene, 409, 411, 421 RNA polymerase fidelity and, 440–441 Hepatitis D, alcohol and, 258, 460 X antigen of, alcohol and, 275, 277, 279chronic, 257-258 clinical features of, 456 genes of, 409, 411, 421 Hepatitis C, alcohol and. See Alcohol, diseases associated with, 258 hepatitis C virus interactions with. epidemiology of, 257 carriers of, therapeutic vaccines for, 501 genes of, 459 hepatitis B coinfection with, 258, 451cirrhosis in, 273-274 diseases associated with, 263-264 452, 455-456, 459-460 interferons in, 472 fibrogenesis in, 371-372 hepatitis C coinfection with, 460 hepatitis D coinfection with, 460 HIV infection with, 460 hepatocellular carcinoma in, 400-403 alcohol interaction in, 280-281, 292, incidence of, 257 mechanisms of, 455-457 377, 388-390, 402-403 carcinogenic mechanisms in, 494-495 natural history of, 455-456 pathogenesis of, 456-460 hepatitis B coinfection with, 401-402 liver regeneration and, 327-328 patterns of, 457 pathogenesis of, 493-494 prevalence of, 257 prevention of, 495, 500-501 prognosis for, 457-460 serologic response in, 256-257 hepatocellular injury in, 307-324 hepatitis B coinfection with, 318-319 transmission of, 257 mediators in, 317-318 virus of. See Hepatitis D virus. patterns of, 307-308 Hepatitis D virus, 451-464 interferons in, clinical studies of, 476antibodies to, 256-257 antigens of, 256-257 in liver transplantation, 483 classification of, 451-452 genes of, 256, 453-455 with extrahepatic manifestations, 481nomenclature of, 256 replication of, 452-453 liver generation in. See Liver, regeneration structure of, 256, 451-452 prevention of, 495, 500-501 Hepatitis delta. See Hepatitis D. transmission of, 261-263 Hepatocellular carcinoma, 395-406 in blood transfusion, decision making chemical carcinogens in, 377-394

alcohol, 378, 386-390 genotoxic, 378-382 nodule pathology and, 384-386 nongenotoxic, 383

geographic distribution of, 396 in hepatitis B, 255, 395-400

alcohol interaction in, 278–280, 292, 377, 388–390, 402

carcinogenic mechanisms in, 494–495 hepatitis C coinfection with, 401–402 liver regeneration and, 327–328 pathogenesis of, 493–494

prevention of, 495-500

in hepatitis C, 263–264, 400–403 alcohol interaction in, 280–281, 292, 377, 388–390, 402–403

carcinogenic mechanisms in, 494–495 hepatitis B coinfection with, 401–402 liver regeneration and, 327–328 pathogenesis of, 493–494 prevention of, 495, 500–501

prevention of, hepatitis vaccines for, 493–505

resistance phenotype in, 380–382 Hepatocyte(s), carcinoma of. See

Hepatocellular carcinoma. injury of, in hepatitis B, **307–324** animal models for, 309–310 hepatitis C coinfection with, 318–

hepatitis C coinfection with, 318– 319 human leukocyte antigen expression

and, 310–314 interferon in, 311–314

patterns of, 307–308 viral antigens and, 314–317

in hepatitis C, 307-324 hepatitis B coinfection with, 318-319

mediators in, 317–318 patterns of, 307–308

regeneration of. See *Liver, regeneration of*. Hepatocyte growth factor, in liver

regeneration, 328–330 Hereditary breast cancer. See *Breast cancer*,

hereditary.

Hetastarch, as replacement fluid, in apheresis, 916

in granulocyte mobilization, for apheresis, 915–916

Heteroduplex analysis, in breast cancer, 157

High molecular weight kininogen, in coagulation, 844–845

 High-pressure liquid chromatography, in mycobacterial identification, 606–607
 HIV infection. See Human immunodeficiency

virus infection.

Hodgkin's disease, bcl-2 gene rearrangements in, 41

in HIV infection, 4 Horizontal laminar flow benches, in mycobacteriology, 535–536 HPA antigens, platelet, 818–819 Human immunodeficiency virus infection, angiocentric immunoproliferative lesion in, 2

diagnosis of, nucleic acid sequencebased amplification in, 94-101 in qualitative detection, 94-95 in quantitative detection, 95-98 performance of, 98-100 single-tube, 95-98

esophageal candidiasis in, 75

hepatitis C coinfection with, 261–262 hepatitis D coinfection with, 460 Hodgkin's disease in, 4

mycobacterial infections in, epidemiology of, 514-516

Mycobacterium avium complex infections in, drug susceptibility testing of, 648–650

testing for, informed consent for, 941-942

transmission of, in blood transfusion, decision making model for, 883–893 prevention of, 787, 977–982 screening for, 948–949

tuberculosis in, in developing countries, 698-700

Human leukocyte antigens, hepatocellular injury from, in hepatitis, 310–314 platelet, 818

typing of, in platelet transfusions, 805–806, 809

Human papillomavirus, detection of, multiplex polymerase chain reaction in, 64, 68–69

Human T-cell lymphotrophic virus-1, transmission of, in blood transfusion, prevention of, 787

Hydroxyethyl starch, as replacement fluid, in apheresis, 916 in granulocyte mobilization, for apher-

esis, 915–916 21-Hydroxylase deficiency, **125–137**

clinical features of, 125–126 diagnosis of, 126, 131–132 gene involved in, 126–128

genotype-phenotype relationships in, 132–135

molecular genetics of, 128-131 treatment of, 126

Hypercholesterolemia, apolipoprotein E polymorphism in, 109–110

familial, affinity adsorption apheresis in, 921

Hyperkalemia, in massive transfusions, 878–879

Hyperlipoproteinemia, apolipoprotein E polymorphism in, 106, 108–110

Hypocalcemia, in massive transfusions, from citrate effect, 878

Hypokalemia, in massive transfusions, 878–879 Hypothermia, in massive transfusions, coagulopathy in, 877–878

Immune response, in hepatocellular injury, in hepatitis, 307–308, 311–318 Immunization, intracellular, in gene

therapy, 202-205

Immunoadsorption, in apheresis, 919–921 Immunodeficiency, from transfusions,

massive, 879

prevention of, 789-790

fungal infections in See Fungal infections. mild, in alcohol consumption, 275 severe combined, gene therapy for, 200– 201

Immunofluorescence assay, platelet, 820–821

Immunoglobulin(s), intravenous, versus plasma exchange, efficacy of, 919 platelet-associated, direct detection of, 823–824

Immunoglobulin G, heavy chain of, in bcl-2 gene rearrangement, 27-28 Immunohistochemical methods, in bcl-2

gene rearrangement detection, 38 Immunotherapy, for hepatitis B, 475 for neoplasia, in vitro, 205–206 in vivo, 206

In situ hybridization, in bcl-2 gene rearrangement detection, 38-39

Indirect tests, of drug susceptibility, of mycobacteria, 643–647

Indomethacin, in hepatitis C, 484 Infections, gene therapy for, 202–205 postoperative, from transfusion immunosuppression, 790

Infectious substances, definition of, 543–544

Infectious waste management, in mycobacteriology, 541–542

Inflammatory pseudotumors, of orbit, versus lymphoma, 9

Informatics, in blood banking, 947–960 in transfusion therapy, 947–960 for blood ordering, 954–956 for compatibility testing, 956–958 for donor screening, 948–951 for inventory management, 952–954 for usage review, 954–956

for validation, 958 Information systems, for pathology practice networking, 235

Informed consent, 931–946 for autopsy, 938–939 for legal purposes, 942

for research studies, 942–944

for transfusion therapy, competency in, 936–937 concept of, 932 donor, 939–940 exceptions for, 937–938 for HIV testing, 941–942 general forms for, 933 indications for, 933–934 information needed in, 934–935 liability in, 933 process of, 935–936 recipient, 940–941 signators for, 936–937 standards of, 933–936 state laws on, 935 versus informed refusal, 936 versus nonconsent, 932–933

Informed refusal, 936

Injury, hepatocellular. See Hepatocyte(s), injury of.

Inoculation, in mycobacteriology, safety in, 530-531

Interferons, 465-491

administration of, 466-467 in hepatic fibrogenesis inhibition, 368

in hepatic fibrogenesis inhibition in hepaticis B, 467–473 clinical studies of, 468–471 core gene mutants and, 419 endogenous, 311–314 in Asians, 471–472 in liver transplantation, 473 nonresponders to, 472 with cirrhosis, 471

with hepatitis D, 472 in hepatitis C, 435 clinical studies of, 476–481 in liver transplantation, 483 with extrahepatic manifestations, 481–

in liver regeneration, 332–333 nonresponders to, 472

side effects of, 467 types of, 466

Interleukins, in alcohol consumption, liver regeneration and, 295–296 in liver regeneration, 352

International sensitivity index, for prothrombin time, 849

Interview, of blood donors, computerized, 949–950

Iron reduction therapy, in hepatitis C, 484 Iron uptake test, in mycobacterial identification, 583, 590–591

Irradiation, of blood components, for transfusion complication prevention, 790-792

Isoelectrofocusing, in apolipoprotein E polymorphism phenotype analysis, 113–114

Isoniazid, in mycobacterial infections, 641 pharmacokinetics of, 720–721

Jehovah's Witnesses, refusal of transfusions, 936 J_H gene, fusion with bcl-2 gene, 28-29

Kanamycin, pharmacokinetics of, 720–721 Ketoprofen, in hepatitis C, 484 Kidney transplantation, affinity adsorption apheresis in, 920–921 Kinyoun stain, for acid-fast bacteria,

554-555

Kleihauer-Betke acid elution test, 905 Ko antigens, platelet, 819

Labeling, of mycobacterial samples and cultures, 546–548

Laboratory management, networking in, 227-241

legal aspects of, 239-240 model for, 233-239 practice size and, 230-233 sociopolitical background for, 227-230

of hospital-based practices, current health care trends and, 225–226 test utilization control in, 749–771

administrative interventions for, 765–

approaches to, 749–750 caveats for, 751–752 clinical feedback in, 760–762 demand reduction in, 759–768

educational interventions for, 759–760 financial feedback in, 762–763 incentives for, 764–765

industry performance in, 752–754 organizational factors in, 755–756 physician profiling in, 763–764 published trials of, 758–759

quality of care and, 757-758 savings estimation in, 754-755

test ordering psychology in, 756–757 utilization measurement in, 750–751 Laminin, in liver, 362–363

Lamivudine, in hepatitis B, 474-475 Large granular lymphocytosis, DNA analysis of, 16-19

Lavage, in specimen collection, for mycobacteriology, 552–553

Legal issues, in blood banking. See Informed consent.

in DNA technology, in forensic testing, 192–193

in networking in laboratory management, 239–240

Leprosy, epidemiology of, 513 Leukemia, bcl-2 gene rearrangements in, 24 platelet transfusions in, 798 recurrent, allogeneic stem cell transplantation in, 913

Leukocytes, polymorphonuclear, in hepatic extracellular matrix degradation, 365 removal of, from blood components,

783-784 for pathogen removal, 787-789 for platelet refractoriness, 785-786 platelets, 801-803

Liability, hospital versus physician, 933 Li-Fraumeni syndrome, breast cancer in, 147

Ligase chain reaction, 90 in sexually transmitted disease diagnosis, 62-63

Linkage analysis, in breast cancer detection, 152–153

Lipid disorders, apolipoprotein E polymorphism and. See *Apolipoprotein* E, polymorphism of.

Lipoprotein receptor binding, apolipoprotein E polymorphism and, 106–107

Liver, alcohol metabolism in, 275 alcoholic disease of, hepatitis virus interactions in. See Alcohol, hepatitis B (or

actions in. See Alcohol, hepatitis B (or C) interactions with.

candidiasis of, in immunodeficiency, 75 fibrogenesis of. See Fibrogenesis, hepatic.

necrosis of, regeneration in, 326–327 nodules in, carcinoma development

from, 379–380, 384–386 regeneration of, **325–339**, **341–360**

alcohol effects on, 293 cytokines and, 295–297 receptor-mediated responses in, 297–299

cytokines in, 295-297, 328-333, 351-354

epithelial cells in, 326–328 extracellular matrix in, 333–334 functional maintenance during, 345–

347 hepatocyte growth factor in, 328–330 in circlesis 355

in cirrhosis, 355 in hepatitis, 354 in transplantation, 354–355

interferons in, 332–333 primary growth-response gene induction in, 342–344

transcription factor activation in, 347-351

transforming growth factors in, 330-332

tumor necrosis factor in, 331 transplantation of, hepatitis B in, interferon in, 473

hepatitis C in, treatment of, 483 regeneration in, 354-355

Lowenstein-Jensen culture media, for mycobacteria, 559–560

Luciferase test, of drug susceptibility, of mycobacteria, 646–647

Lupus anticoagulants, measurement of, 858–859

Lymphocytes, modified with tumor necrosis factor, in gene therapy, for neoplasia, 206

Lymphocytosis, large granular, DNA analysis of, 16–19

Lymphoid hyperplasia, versus lymphoma, 9-10

Lymphoid malignancies. See also Lymphoma.

bcl-2 gene rearrangements in. See bcl-2 gene, rearrangements of.

Lymphoma, bcl-2 gene rearrangements in, 23-24

diffuse, 40 follicular, 39–40

prognostic value of, 42-43 small noncleaved cell, 40-41

cutaneous T-cell, photopheresis in, 921-922

DNA analysis in, of mucosa-associated lymphoid tissue, 5–7 of skin, 11–13

small cell cleaved, 7–11

Lymphoproliferative disorders, B-cell, in transplantation, 13–16

Lysosomal storage diseases, gene therapy for, 200–201

MacConkey agar, in mycobacterial identification, 583, 591

Malaria, transmission of, in blood transfusion, prevention of, 977

Malnutrition, in alcohol abuse, hepatocellular sensitivity to, 292 Managed care, pathology services in,

networking in. See Laboratory management, networking in. Marketing, for pathology practice

networking, 238
Mathematical calculations, for blood banking. See *Transfusion therapy*, mathematical calculations in.

MB/BacT System, for mycobacterial culture, 562-563

Metalloproteinases, in hepatic extracellular matrix degradation, 365

Microaggregate filtration, of blood component cells, for transfusion, 783–784

Microbial Identification System, in mycobacteriology, 605–606

Microcolony method, for mycobacterial culture, 563–564, 604

Microscopy, in mycobacteriology, 553–554 in developing countries, 706–707

Middlebrook agar, for mycobacterial culture, 559-560

Minimum inhibitory concentration, determination of, for mycobacteria, 642, 645–646

for Mycobacterium avium complex, 651–652

Mitochondrial DNA sequencing, in forensic testing, 190–191

Mixed passive hemagglutination assay, for platelet antibodies, 821

Molecular pathology. See DNA technology. Monoclonal antibody-specific immobilization of platelet antigens

assay, 823 Mucopolysaccharidosis, gene therapy for,

200–201

Mucormycosis, in immunodeficiency,

78–79

clinical features of, 78–79 Mucosa-associated lymphoid tissue,

lymphoma of, ĎNÂ analysis in, 5–7 Muir-Torre syndrome, breast cancer in, 147

Multidrug-resistant gene, modification of, in chemoprotection, 207

Muscular dystrophy, gene therapy for, 200-201

Mycobacterial growth indicator tubes, 560–561

Mycobacterial infections. See also Tuberculosis.

atypical. See also specific organism. epidemiology of, 699 epidemiology of, 513–516

Mycobacteriology, amplification techniques in, 617-639

Association of State and Territorial Public Health Laboratory Directors recommendations on, 731–743

automation in, culture equipment, 560, 562-563

cultures in. See under Cultures.

drug monitoring in, 717–729 drug susceptibility testing in. See Drug susceptibility testing, of mycobacteria.

epidemiology and, 513-516 future developments in, 522-523

identification techniques in, conventional, **569–601**

approach to, 570 arylsulfatase method, 572, 578, 581, 583, 587

carbon usage measurement, 583, 587–588

catalase methods, 572, 578, 581, 583, 588-589

colonial morphology, 572, 578, 581, 583, 589–590

growth rate categorization, 570-571, growth rate determination, 590 iron uptake measurement, 583, 590-MacConkey agar growth rate, 583, NAP test, 591-592 niacin production measurement, 572, 578, 581, 592 nitrate reduction rate, 572, 578, 581, 583, 592-593 nonphotochromogenicity in, 571-578 photochromogenicity in, 570-571, 578-580 pigment production, 572, 578, 581, 583, 593–594 polymyxin B inhibition test, 583, 594 pyrazinamide hydrolysis, 572, 578, 581, 594-595 rapid growing capability, 582-586 role of, 569-570 scotochromogenicity in, 580-582 sodium chloride tolerance, 581, 583, species isolated in, 571 TCH resistance, 573, 578, 581, 596tellurite reduction, 573, 595-596 temperature studies, 572-573, 578, 581, 583, 596 Tween 80 hydrolysis, 573, 578, 581, 597

597 urease test, 573, 578, 581, 597–598 in developing countries, 707–708, 711– 712

rapid, 603-615

604

gas-liquid chromatography in, 605–606

high-pressure liquid chromatography in, 606–607 microcolony method in, 563–564,

p-nitro-α-acetylamino-βhydroxypropiophenone test in, 604-605

nucleic acid probes in, 607–608 nucleic acid sequencing in, 608–611 quality control of, 662

in developing countries, 520–522, **697– 716**

disease control and, 700–701 drug susceptibility testing, 707 epidemiologic considerations in, 698– 699

identification testing, 707–708 intermediate level laboratory in, 704 laboratory networks in, 702–705 new methods for, 710–712 peripheral level laboratory in, 704 protocols for, 712–713 quality assurance in, 708–710 reference laboratory in, 703–704 services available for, 701–702 specimen collection units in, 704–705 technical standards and procedures for, 705–707

laboratory for, 513–525 polymerase chain reaction in, 617–639 protocols for, in developing countries, 712–713

in industrialized countries, 677–695 algorithm for, 679–686 clinical predictors versus test pathways, 692–693 cost-effective strategies, 686–689

extent of service, 678–679 future trends in, 689–690 reference laboratory usage and, 686

quality assurance in, 657-675 safety in, 527-550

services available for. See also Mycobacteriology, in developing countries. in United States, 516–520

specimen processing for, 551–567 Mycobacterium abscessus, identification of, 583

Mycobacterium africanum, identification of, 572–573

Mycobacterium asiaticum, identification of, 578–579
Mycobacterium avium complex, drug

susceptibility testing of, 648–652 epidemiology of, 515–516 identification of, 572–574, 581 Mycobacterium avium-intracellulare-

scrofulaceum, identification of, 580 Mycobacterium bovis, identification of, 572–573

Mycobacterium branderi, identification of, 572–575

Mycobacterium celatum, identification of, 572–573, 575

Mycobacterium chelonae, identification of, 583–585

Mycobacterium conspicuum, identification of, 572–573, 575

Mycobacterium flavescens, identification of, 580–581, 583

Mycobacterium fortuitum complex, identification of, 583–585

Mycobacterium fortuitum-chelonae, drug susceptibility testing of, 652-653

Mycobacterium gastri, identification of, 572–573, 575

Mycobacterium genavense, identification of, 572–573, 575

Mycobacterium gordonae, identification of, 580-582

Mycobacterium gordonae (Continued) isolation of, 559

Mycobacterium haemophilum, identification of, 572–573, 576

Mycobacterium interjectum, identification of, 581–582

Mycobacterium intermedium, identification of, 578–579

Mycobacterium kansasii, identification of, 578–579

Mycobacterium lentiflavum, identification of, 582

Mycobacterium malmoense, identification of, 572–573, 576

Mycobacterium marinum, drug susceptibility testing of, 652-653

identification of, 578-579

Mycobacterium mucogenicum, identification of, 583

Mycobacterium neoaurum, identification of, 583, 585

Mycobacterium paratuberculosis, identification of, 576

Mycobacterium phlei, identification of, 585 Mycobacterium scrofulaceum, identification of, 581–582

Mycobacterium shimoidei, identification of, 572–573, 576–577

Mycobacterium simiae, identification of, 572–573, 578–580

Mycobacterium smegmatis, identification of, 583, 585

Mycobacterium szulgai, identification of, 578, 581–582

Mycobacterium terrae complex, identification of, 572–573, 577

Mycobacterium thermoresistible, identification of, 583, 585

Mycobacterium triviale, identification of, 572–573, 577

Mycobacterium tuberculosis complex. See also Tuberculosis.

bacteriology of. See Mycobacteriology. detection of, polymerase chain reaction in. See Polymerase chain reaction, in mycobacteriology.

drug susceptibility testing of, 643–648 identification of, 571–574 infectious dose of, 529

Mycobacterium ulcerans, identification of, 572–573, 577

Mycobacterium xenopi, identification of, 572–573, 577–578, 581

Mycolic acids, chromatography of, 607–608 Mycosis fungoides, DNA analysis of, 11–13

Myelosuppressive drugs, in stem cell mobilization, for apheresis, 909–910 Necrosis, liver, regeneration in, 326–327 Negligence, versus battery, 932–933 Neisseria gonorrhoeae, detection of, multiplex polymerase chain reaction

multiplex polymerase chain re in, 64–68

Neocytes, in transfusion, estimation of, 897 Neonatal alloimmune thrombocytopenic purpura, platelet antibody detection in, 825–827

Neonates, hepatitis B transmission to, 253 Neoplasia, gene therapy for, 205–208 Nephelometry, in platelet antibody

detection, 825
Networking, in pathology services. See
Laboratory management, networking in.
New Oxford assay, for coagulation factor

inhibitors, 857

Niacin production test, in mycobacterial identification, 572, 578, 581, 592

Nitrate reduction test, in mycobacterial identification, 572, 578, 581, 583, 592–593

p-Nitro-α-acetylamino-βhydroxypropiophenone test, in mycobacterial identification, 591–592, 604–605

Nodules, hepatic, carcinoma development from, 379–380, 384–386

Nomenclature, standardized, for pathology practice networking, 237

Nongenotoxic carcinogens, in hepatocellular carcinoma, 383

Nonphotochromogens, identification of, 571–578

Nosocomial infections, candidiasis, epidemiology of, 82–85

Nuclear factor kappa B, activation of, in liver regeneration, 349–351

Nucleic acid probes, in mycobacterial identification, 607–608

Nucleic acid sequence-based amplification, 89-103

amplification in, 92, 94

in ĤIV infection, 94–101 in qualitative detection, 94–95 in quantitative detection, 95–98 performance of, 98–100

single-tube, 95–98 in sexually transmitted disease diagnosis, 62–63

methods for, 90–91 nucleic acid isolation in, 91–92 product detection in, 94

Nucleic acid sequencing, in mycobacterial identification, 608–611

Nutrition, in alcohol abuse, hepatocellular sensitivity to, 292

Oligonucleotides, antisense, in gene therapy, 203 Oral cavity, candidiasis of, in immunodeficiency, 75

Oral contraceptives, thrombosis risk in, factor V gene mutation and, 176 Orbit, lymphoma of, 7-11

Osteopetrosis, in carbonic anhydrase II deficiency, genetic studies of, 213-214 Oval cells, in liver regeneration, 326-327

Ovarian cancer, hereditary breast cancer

and, 140, 143, 145-147

Oxygen-hemoglobin dissociation curve, shifting of, in massive transfusions, 875-876

P1A antigens, platelet, 818-819 Packaging, of mycobacterial materials, 544-546

Papillomavirus, detection of, multiplex polymerase chain reaction in, 64,

Paternity testing, consent for, 942 PCR. See Polymerase chain reaction. Pencyclovir, in hepatitis B, 474

Pentastarch, as replacement fluid, in apheresis, 916

in granulocyte mobilization, for apheresis, 915-916

Pen/Yuk antigens, platelet, 819 Peripheral blood stem cells. See Stem cells. Peripheral vascular disease, apolipoprotein

E polymorphism in, 112 Peritonitis, candidal, in immunodeficiency,

Perlecan, in liver, 363

Peroxisome proliferators, in hepatocellular carcinoma, 383

Personal protective equipment, for mycobacteriology, 540-541

Personnel, laboratory, in state laboratories, for mycobacteriology, 733-734 tuberculin tests for, 542

tuberculosis incidence in, 528 Phagocytosis, in hepatic extracellular matrix degradation, 365

Pharmacodynamics, of antimycobacterial drugs, 721

Pharmacokinetics, of antimycobacterial drugs, 718-721

Phlebotomy, in hepatitis C, 484 Photochromogenicity, of mycobacteria, identification techniques based on, 570-571, 578-580

Photopheresis, 921-922

Physicians, laboratory test use by, control of. See Laboratory management, test utilization control in.

Pigment production, in mycobacterial identification, 572, 578, 581, 583, 593-594

Plasma agarose method, for coagulation factor inhibitor assay, 857-858 Plasma mixing studies, in coagulation

disorders, 852-853

Plasma reduction, in blood component modification, for transfusion, 782 Plasma volume, calculation of, 897

Plasmapheresis, angiotensin-converting enzyme inhibitors effects in, 917-918 plasma removal in, calculations for, 905

Plasmin, in hepatic extracellular matrix

degradation, 365

Platelet(s), antibodies to, 817-835 antigens corresponding to, 817-820 detection of, in autoimmune thrombocytopenic purpura, 829-831

in drug-dependent

thrombocytopenia, 831-832

in neonatal alloimmune thrombocytopenic purpura, 825-827

in post-transfusion purpura, 827-828

in pseudothrombocytopenia, 832-833

in refractoriness, 828-829 methods for, 820-825

to nonspecific antigens, 817-818 to platelet-specific antigens, 818-820

antigens of, assay of, 823 cryptic, 820

nonspecific, 817-818 platelet-specific, 818-820 typing of, 825

in coagulation, 839-840 synthetic analogs of, 811

transfusion of, 797-816 ABO matching for, 806-807 administration of, 808

alternatives to, 811 autologous, 809-810 components for, 799-804

filtered cells in, 783-784 in refractory patient, 808-810

increments for, 902-903 indications for, 797-799 initiation of, 804-806

irradiated cells in, 790-792 leukocyte-reduced, 801-803

ordering of, 955-956 platelet crossmatching in, 809-810 prophylactic, 798-799

protocol for, 804-810 refractoriness in, 828-829

prevention of, 785-786 Rh type matching for, 807

single-donor versus multiple-donor, 800-801 storage additives for, 803-804

Platelet(s) (Continued)

storage time and, 808

transfusion reactions in, prevention of,

washed cells in, 781-782

Platelet immunofluorescence assay, 820–821

Platelet-associated immunoglobulins, direct detection of, 823–824

Platelet-derived growth factor, in stellate cell proliferation, 368-369

Plateletpheresis, 800-801

Polymerase, in hepatitis B, hepatocellular injury from, 317

Polymerase chain reaction, 90 automation of, 217–219

costs of, 52

enthusiasm for, 50-51

in apolipoprotein E polymorphism genotype analysis, 114, 116

in bcl-2 gene rearrangement detection, 35-39

in breast cancer gene detection, 149–150 in candidiasis diagnosis, 77–78

in Chlamydia trachomatis detection, evaluation of, 52-59

in factor V gene mutation detection, 178-180

in forensic testing, 188-189

in hepatitis C virus detection, 259-260 in hepatitis C virus genotyping, 433-434

in 21-hydroxylase deficiency diagnosis, 128–129, 131–132

in mycobacteriology, **617–639** amplification approaches in, 621–623 amplification targets in, 623–624 cell lysis in, 619

commercial systems for, 630-631 definition of, 618-619

detection schemes in, 625–626 developmental challenges in, 629 extraction methods in, 619–620

implementation of, 634-637 in developing countries, 711

in-house versus commercial, 631 nested, 621–623

principles of, 617–619

purification methods in, 619–620 sensitivity and specificity of, 626–629

versus Gen-Probe MTD system, 632-634

miniaturization of, 217 multiplex, in sexually transmitted dis-

ease diagnosis, 61–71
Chlamydia trachomatis, 64–68
commercial tests for, 62–63
human papillomavirus, 64, 68–69
Neisseria gonorrhoeae, 64–68
principles of, 63
Ureaplasma urealyticum, 69

sequence-specific, in factor V gene mutation detection, 180–183

skepticism about, 51-52

Polymyxin B, in mycobacterial identification, 583, 594

Potassium, imbalance of, in massive transfusions, 878–879

Pregenome, of hepatitis B virus gene, 409 Prekallikrein, in coagulation, 844–845 PRELOG expert system, for blood donor

suitability, 951

Primer-mediated restriction endonuclease site generation, in factor V gene mutation detection, 180

Probes, DNA, in mycobacteriology, quality control of, 661

nucleic acid, in mycobacterial identification, 607–608

Proficiency testing, in mycobacteriology, 669–672

Proportion method, for drug susceptibility testing, of mycobacteria, 644–645

Prostaglandin(s), in hepatic fibrogenesis inhibition, 368

in stellate cell proliferation, 369–370 Prostaglandin E, in hepatitis B, 474 in hepatitis C, 483–484

Protein A, activated, resistance to. See Activated protein C and/or A.

Protein C, activated, resistance to. See Activated protein C and/or A. evaluation of, 861–862

deficiency of, evaluation of, 859-860 in coagulation regulation, 846-847

Protein S, deficiency of, evaluation of, 860-861

in coagulation regulation, 847 in hemostasis, 171

Protein truncation testing, in breast cancer, 159

Proteinases, in hepatic extracellular matrix degradation, 365

Proteoglycans, in liver, 363–364 Prothrombin time, 848–849

abnormal, differential diagnosis of, 850–852

Prothrombinase complex, in coagulation, 840

Protocols, for mycobacteriology. See under Mycobacteriology.

Pseudothrombocytopenia, platelet antibodies in, 832–833

Pseudotumors, inflammatory, of orbit, versus lymphoma, 9

Purification, in polymerase chain reaction, 619-620

Purpura, autoimmune thrombocytopenic, platelet antibodies in, 829–831

neonatal alloimmune thrombocytopenic, platelet antibody detection in, 825– 827 post-transfusion, 827–828 intravenous immunoglobulin in, 919 Pyrazinamide, in mycobacterial identification, 572, 578, 581, 594–595 in mycobacterial infections, 641–642 in susceptibility testing, 646 pharmacokinetics of, 720–721

Q-beta replicase assay, 90 in sexually transmitted disease diagnosis, 62-63

Quality assurance, in blood banking. See Transfusion therapy, error detection and reduction in.

in forensic testing, 191–192 in mycobacteriology, 657–675

Association of State and Territorial Public Health Laboratory Directors recommendations on, 739– 742

definition of, 657 in developing countries, 708–710 in therapeutic drug monitoring, 725 proficiency testing in, 669–672 quality control in, 658–663 quality improvement in, 664 specimen-related issues in, 664–667 test sensitivity and, 667–668 test usage optimization in, 669 test utilization reduction and, 757–758 turnaround times and, 668–669

standardized, for pathology practice net-

working, 236–237 Quality control, in mycobacteriology, 658–663

Quality improvement, in mycobacteriology, 664

Quasispecies swarm, of hepatitis C virus, 439-446

Radiometric method, in drug susceptibility testing, in developing countries, 711–712

of atypical mycobacteria, 653 of *Mycobacterium avium* complex, 649–651

Rapid techniques, in mycobacteria identification. See Mycobacteriology, identification techniques in, rapid.

Rapidly growing mycobacteria, identification of, 582–586

Red blood cells, alloantibodies to, detection of, 901–902

for transfusion, filtered, 783–784 frozen-thawed-deglycerolized, 782–783 irradiated, 790–792 washed, 781–782 kinetics of, calculations for, 897 mass of, calculation of, 896 Red cell adherence test, solid-phase, for platelet antibodies, 822–823 Reference laboratories, for mycobacteriology, 686 in developing countries, 703–704 Refusal, informed, 936

Regeneration, of liver cells. See *Liver*, regeneration of.

Regulations, for DNA technology, in forensic testing, 191–192 for mycobacterial sample handling, 544

Rejection, in transplantation, photopheresis in, 922

Renal tubular acidosis, in carbonic anhydrase II deficiency, genetic studies of, 213–214

Reporting, of errors, in blood banking, 965–967

standardized procedures for, in pathology practice networking, 237

Reptilase time test, in coagulation disorders, 854

Research, informed consent in, 942-944 Respirators, for mycobacteriology, 541 Restriction endonuclease fingerprinting, in breast cancer, 157

Restriction endonuclease site generation, primer-mediated, in factor V gene mutation detection, 180

Restriction enzyme analysis, in fungal typing, 81–82

Restriction fragment length polymorphism, in apolipoprotein E polymorphism genotype analysis, 116

genotype analysis, 116 in factor V gene mutation detection, 178–180

in forensic testing, 188 in fungal typing, 82

Rh type matching, in platelet transfusions, 807

Ribavirin, in hepatitis C, 484 Ribozymes, in gene therapy, 203 Rifabutin, pharmacokinetics of, 720–721 Rifampin, pharmacokinetics of, 720–721 RNA, amplification of, polymerase chain

reaction in. See *Polymerase chain* reaction.

as decoy, in gene therapy, 204

RNA polymerase, in hepatitis C virus replication, 440–444 Rocket electrophoresis, for platelet

Rocket electrophoresis, for platelet antibodies, 824

Rule of 3, in transfusion therapy, 895 Rule of 7, in transfusion therapy, 895–896

Safety, in mycobacteriology, 527–550 director role in, 542 Safety (Continued)

in level 2 laboratory, 538–539 in level 3 laboratory, 539–540 in routine procedures, 530–531 in specimen transport, 543–548 infectious waste management in, 541–542

information sources for, 548 medical surveillance in, 542–543 personal protective equipment in,

primary biocontainment in, 531–538 relative risks versus sample type, 528–530

secondary biocontainment in, 538 training for, 543

in transfusion therapy, 975–988 appropriate use in, 984–985 component modification in, 985 decision making model for, 883–893 disease transmission reporting in, 983–984

follow-up of donors and inventory in, 982-983

selection of donors in, 975-978 testing of donor blood in, 978-982

Saliva, hepatitis C virus in, 262 Salt wasting, in congenital adrenal

hyperplasia, 134 Schizophrenia, gene therapy for, 202 Scotochromogens, identification of,

580-582 Secreted protein acidic and rich in cysteine (SPARC), in liver, 363

Sepsis, transfusion-transmitted, 788–789 Septi-Chek MB System, for mycobacterial culture, 564

Sequence-specific polymerase chain reaction, in factor V gene mutation detection, 180–183

Severe combined immunodeficiency, gene therapy for, 200–201

Sexually transmitted diseases, diagnosis of, multiplex polymerase chain reaction in, 61–71

Chlamydia trachomatis, 64–68 commercial tests for, 62–63 human papillomavirus, 64, 68–69 Neisseria gonorrhoeae, 64–68 principles of, 63

Ūreaplasma urealyticum, 69 Sézary syndrome, photopheresis in, 922 Signal transduction, in liver cell regeneration, alcohol effects on, 293

Signal transduction and activator of transcription (stat3), activation of, in liver regeneration, 351

Single-stranded conformation polymorphism analysis, in breast cancer, 155 Skin, lymphoma of, DNA analysis of, 11-13

Slide culture test, of drug susceptibility, of mycobacteria, 647–648

Slot blot test, in breast cancer gene mutation detection, 160

Sly disease, gene therapy for, 200–201 Smears, acid-fast. See Acid-fast bacteria, smears of.

Sodium chloride tolerance test, in mycobacterial identification, 581, 583, 595

Solid-phase red cell adherence test, for platelet antibodies, 822–823

Southern blot analysis, in bcl-2 gene rearrangement detection, 31-37 in breast cancer, 158

SPARC, in liver, 363

Specimens, for mycobacteriology, 551–567 collection of, 551–553

in developing countries, 704–705 cross-contamination of, 665–667 decontamination of, 558–559, 660 microscopic examination of, 553–554 in developing countries, 706–707

processing of, 557–559 cost-effectiveness in, 687–688 quality assurance in, 664–667 safe handling of, 543–548

Spill clean-up, in mycobacteriology, 541–542

Sputum, mycobacterial studies of, collection of, 552 sample handling in, 529 for polymerase chain reaction, 619-620

Stains, for acid-fast bacteria, 554–555
Standard operating procedures, deviations from, in blood banking. See
Transfusion therapy, error detection and reduction in.

Stat3 (signal transduction and activator of transcription), activation of, in liver regeneration, 351–352

Stellate cells, function of, 366 proliferation of, 366–370

Stem cells, apheresis-derived, 907–914 advantages of, 908 allogenic transplantation of, 912–914 CD34+ cell measurement in, 910–911 mobilization of, 908–910 yield optimization in, 911–912

Stool specimens, for mycobacteriology, 553 Streptomycin, pharmacokinetics of, 720–721

Stroke, apolipoprotein E polymorphism in,

Stromelysins, in hepatic extracellular matrix degradation, 365

Susceptibility testing, of mycobacteria. See Drug susceptibility testing, of mycobacteria. Syndecans, in liver, 363–364

T lymphocytes, CD34+, measurement of, in stem cell transplantation, 910–911 gene rearrangement in, in hematopoietic disorders. See *Hematopoietic disor*-

in hepatocellular injury, in hepatitis, 314–315, 318

TCH test, in mycobacterial identification, 573, 578, 581, 596–597

Telangiectasia-ataxia, breast cancer in, 148 Teleconferencing, for pathology practice networking, 235–236

Tellurite reduction, in mycobacterial identification, 573, 595–596

Temperature studies, in mycobacterial identification, 572, 578, 581, 583, 596 Tenascins, in liver, 363

Tenase complex, in coagulation, 840
Tests, physician use of, control of. See
Laboratory management, test utilization

control in.

Therapeutic privilege, informed consent and, 937–938

Thiacetazone, pharmacokinetics of, 720–721

Thrombin, in coagulation, 839, 843 Thrombin time, 853–854

Thrombocytopenia, affinity adsorption apheresis in, 920

in cytokine mobilization, of stem cells, 912-913

in massive transfusions, 876–877 platelet antibodies in, autoimmune, 829– 831

detection of, 825-827 drug-dependent, 831-832

platelet transfusions in. See Platelet(s), transfusions of.

post-transfusion, platelet antibodies in, 827-828

refractory, platelet transfusions in, 808-810

Thrombophilia, in activated protein C and A resistance, 171–173

Thrombosis, multifactorial, gene mutations in, 176

Tissue engineering, gene therapy in, 208 Tissue factor pathway inhibitor, in

coagulation regulation, 845 TP53 gene, DNA analysis of, direct, 153–156

functional detection of mutations of, 158-159 tests for, 149, 151-152 mutations of, in ataxia-telangiectasia, 148

in hereditary breast cancer, 142, 147-148

Training, for error detection and

reduction, in blood banking, 964-965

in mycobacteriology, Association of State and Territorial Public Health Laboratory Directors recommendations for, 739–741 for safety, 543

Transcription factors, activation of, in liver regeneration, 347, 349

Transcription-mediated amplification, in mycobacteriology, 632–634

Transforming growth factors, in hepatic fibrogenesis, 367

in liver regeneration, 330-332 in stellate cell proliferation, 368-369

Transfusion therapy, apheresis for. See Apheresis.

bacterial contamination in, 984–985

component modifications in, 781–795 filtered cells in, 783–784

for alloimmunization prevention, 785–786

for immunomodulation prevention, 789–790

for infection transmission prevention, 786–789

for refractoriness to platelets, 785–786 for transfusion reaction prevention, 784–785

frozen-thawed-deglycerolized cells, 782–783

irradiated cells in, 790-792 washed cells in, 781-782

disease transmission. See also Human immunodeficiency virus infection; specific diseases, e.g., Hepatitis B.

component modification in, 786–789 disease transmission in, bacterial, 788– 789

error detection and reduction in, 961-973

corrective action in, 967–972

error definition for, 961 organization for, 962-964

personnel training and competency for, 964–965

preventive measures in, 967–972 process parameter definition in, 964 reporting in, 965–967

exchange, whole blood reconstitution for, 898–899

granulocyte, 914–916

informatics in. See Informatics. informed consent in. See Informed consent. Transfusion therapy (Continued) massive transfusions in, 873-882 acid-base imbalance in, 876 citrate effect in, 878 clinical problems with, 875-879 coagulation abnormalities in, 876-878 definition of, 873 fluid therapy with, 874 hemoglobin dissociation curve shifts in, 875-876 hemorrhage physiology and, 873-874 immunosuppression in, 879 potassium imbalance in, 878-879 treatment protocol for, consultation on, 879-881 mathematical calculations in, 875-906 antibody specificity confidence, 901blood volume, 896 clotting factor activity levels, 903-905 compatible crossmatch probability, 901 fetal-maternal hemorrhage volume estimation, 905 for exchange transfusion, 898-899 hemoglobin increment after transfusion, 898 plasma removal in plasmapheresis, 905 plasma volume, 897 platelet transfusion increments, 902probability of transfusion event, 899red cell kinetics, 897 red cell mass, 896 rule of 3, 895 rule of 7, 895-896 platelets in. See Platelet(s). purpura after, intravenous immunoglobulin in, 919 platelet antibodies in, 827-828 reactions in, prevention of, component modification in, 784-785 probability of, 899-901 refusal of, 936 safety of, 975-988

appropriate use in, 984-985

983-984

982-983

for, 883-893

disorder in, 13-16

component modification in, 786-789,

decision making model for, 883-893

follow-up of donors and inventory in,

disease transmission reporting in,

selection of donors in, 975-978 testing of donor blood in, 978-982

testing in, decision making for, model

Transplantation, B-cell lymphoproliferative

extracellular, gene therapy in, 208 fungal infections in, 79 kidney, affinity adsorption apheresis in, liver, hepatitis B in, interferon in, 473 hepatitis C in, treatment of, 483 regeneration in, 354-355 rejection in, photopheresis in, 922 stem cell, allogeneic, 912-914 Transport, of mycobacterial samples and cultures, 543-548 Triglycerides, blood levels of, in apolipoprotein E polymorphism, 107 Tuberculin tests, for laboratory personnel, 542 Tuberculosis, bacteriology of. See Mycobacteriology. clinical features of, test pathways and, control of, in developing countries, 700-701 drug-resistant, 515 in developing countries, 699-701 epidemiology of, 513-516, 698-699 in laboratory personnel, 528 HIV infections with, 514-516 Tumor necrosis, in lymphocyte modification, in gene therapy, for neoplasia, 206 Tumor necrosis factors, in alcohol consumption, 275-276, 295-297 liver regeneration and, 295-297, 299-301 in hepatitis B, 311, 314 in liver regeneration, 331 Tumor suppressor genes, in gene therapy, for neoplasia, 207 inactivation of, in breast cancer, 140 Turbidimetric broth-dilution method, for drug susceptibility testing, of Mycobacterium avium complex, 651-652 Tween 80 hydrolysis test, in mycobacterial identification, 573, 578, 581, 597

components, 791–792
with apheresis, in cutaneous T-cell
lymphoma, 921–922
Undulin, in liver, 363
Ureaplasma urealyticum, detection of,
multiplex polymerase chain reaction
in, 69
Urease test, in mycobacterial identification,
573, 578, 581, 597–598
Urine specimens, for mycobacteriology,
553
decontamination of, 559
Ursodeoxycholic acid, in hepatitis C, 484

Ultraviolet radiation, of blood

Utilization review, standardized, for pathology practice networking, 236 Woodchuck hepatitis virus, 310 Wound infections, candidal, in immunodeficiency, 77

Vaccination, for hepatitis B, 495–500 for hepatitis C, 500–501 intracellular, in gene therapy, 202–205 Vascular disease, apolipoprotein E polymorphism in, 112 Virilization, in congenital adrenal hyperplasia, 126, 134 Vitamin K-dependent coagulation factors, 838–839 Volume replacement, with massive

in hepatocellular injury, 316–317

Yeast functional assay, in breast cancer,

X antigen, of hepatitis B virus, alcohol

and, 275, 277, 279-280

as carcinogen, 494

159

gene of, 409, 411, 421

Washing, of blood component cells, 781–782 Waste, infectious, management of, in mycobacteriology, 541–542 Whole blood, reconstitution of, for exchange transfusion, 898–899

transfusions, 874

Zephiran, in mycobacterial specimen decontamination, 558 Ziehl-Neelsen stain, for acid-fast bacteria, 554–555 Zygomycosis, in immunodeficiency, 78–79

clinical features of, 78-79